

Name: _____

Basic Atomic Structure Worksheet

1. The 3 particles of the atom are:

- a. electrons
- b. protons
- c. neutrons

Their respective charges are:

- a. negative
- b. positive
- c. none

2. The number of protons in one atom of an element determines the atom's identity, and the number of electrons determines the reactivity of the element.

3. The atomic number tells you the number of protons in one atom of an element. It also tells you the number of electrons in a neutral atom of that element. The atomic number gives the "identity" of an element as well as its location on the periodic table. No two different elements will have the same atomic number.

4. The average atomic mass of an element is the average mass of an element's naturally occurring atom, or isotopes, taking into account the mass of each isotope.

5. The mass number of an element is the total number of protons and neutrons in the nucleus of the atom.

6. The mass number is used to calculate the number of neutrons in one atom of an element. In order to calculate the number of neutrons you must subtract the protons from the mass number.

7. Give the symbol of and the number of protons in one atom of:

Lithium Li 3
Iron Fe 26
Oxygen O 8
Krypton Kr 36

Bromine Br 35
Copper Cu 29
Mercury Hg 80
Helium He 2

8. Give the symbol of and the number of electrons in a neutral atom of:

Uranium U 92
Boron B 5
Chlorine Cl 17

Iodine I 53
Xenon Xe 54

9. Give the symbol of and the number of neutrons in one atom of:

(Mass numbers are ALWAYS whole numbers...show your calculations)

Barium Ba 81
Carbon C 6
Fluorine F 10
Europium Eu 89

Bismuth Bi 126
Hydrogen H 0
Magnesium Mg 12
Mercury Hg 121

10. Name the element which has the following numbers of particles:

- a. 26 electrons, 29 neutrons, 26 protons Fe (iron)
- b. 53 protons, 74 neutrons I (iodine)
- c. 2 electrons (neutral atoms) He (helium)
- d. 20 protons Ca (calcium)
- e. 86 electrons, 125 neutrons, 82 protons Pb (lead)
- f. 0 neutrons H (hydrogen)

11. If you know ONLY the following information can you ALWAYS determine what the element is? (Yes/No)

- a. Number of protons Yes
- b. Number of neutrons No
- c. Number of electrons in a neutral atom Yes
- d. Number of electrons No

12. Fill in the missing items in the table below.

NAME	SYMBOL	Z	A	# PROTONS	# ELECTRONS	# NEUTRONS	ISOTOPIC SYMBOL
a. Sodium	Na	11	23	11	11	12	$^{23}_{11}\text{Na}$
b. Chlorine	Cl	17	35	17	17	18	$^{35}_{17}\text{Cl}$
c. Potassium	K	19	39	19	19	20	$^{39}_{19}\text{K}$
d. Phosphorus	P	15	31	15	15	16	$^{31}_{15}\text{P}$
e. Iron	Fe	26	56	26	26	30	$^{56}_{26}\text{Fe}$
f. Iodine	I	53	127	53	53	74	$^{127}_{53}\text{I}$
g. Silver	Ag	47	108	47	47	61	$^{108}_{47}\text{Ag}$
h. Krypton	Kr	36	84	36	36	48	$^{84}_{36}\text{Kr}$
i. Tungsten	W	74	184	74	74	110	$^{184}_{74}\text{W}$
j. Copper	Cu	29	64	29	29	35	$^{64}_{29}\text{Cu}$
k. Indium	In	49	115	49	49	66	$^{115}_{49}\text{In}$
l. Gold	Au	79	197	79	79	118	$^{197}_{79}\text{Au}$
m. Sulfur	S	16	32	16	16	16	$^{32}_{16}\text{S}$